

## **APPENDIX B**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Jeffrey A. Anderson                  Art Unit : 3635  
Serial No. : 10/633,694                  Examiner : Jeanette E. Chapman  
Filed : August 5, 2003  
Title : METAL FRAMING MEMBER AND METHOD OF MANUFACTURE

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION OF FRANCIS J. ROOST UNDER 37 C.F.R. §1.132**

I, Francis J. Roost declare:

1. I am a retired (unlicensed) Certified Public Accountant (CPA). I have been asked to comment on the potential commercial value of the design as presented by the Provisional Application No. 60/588,798 filed on July 19, 2004 which is also presented in U.S. Application Serial No. 10/633,694, also published as US 2004-0093822 A1, which claims priority to that provisional application.
2. First, based on a 2002 study (best available) for non residential construction, interior walls, published by the Steel Framing Alliance, there are 2.8 billion lineal feet of product made annually, that could be affected. A copy of the study is attached as Exhibit A. See page 13. The Reported Tonnage of product have been converted to lineal feet in exhibit B.

Second, the design concept described in the above-mentioned provisional and utility applications reduces usage of material by 37% as compared to the existing commercial product. Current interior wall technology uses 0.331 lb/ft versus 0.209 lb/ft with this new concept. The savings which result is 0.122 lb/ft. A copy of the calculations is Exhibit C

Third, according to the 9/6/2007 edition of the American Metal Market, pricing on Galvanized Steel used to make this product is currently is \$39.00 per hundredweight or \$0.39/lb.. A copy of the pricing is attached as Exhibit D.

3. If this design was incorporated into 100% of the available market, the annual market value through material savings alone would be \$133,000,000.00. Calculations are Exhibit E. These calculations do not include Exterior walls, Floors and Roofs, which per the inventor, are also potential uses of this patent.

4. All statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true; and further these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

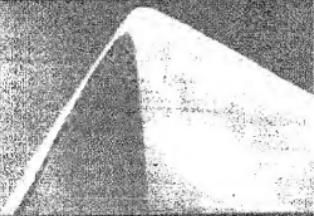
Date: Sept 18, 2003



Francis J. Roost

# **EXHIBIT A**

**DATA AND STATISTICAL ANALYSIS OF THE  
USE OF COLD FORMED STEEL IN  
NONRESIDENTIAL CONSTRUCTION**



Steel Framing Alliance

[www.steel-framing.org](http://www.steel-framing.org)

# Introduction

Steel framing, a concept introduced in the 1920s and 1930s, is now a common sight in commercial, institutional, and industrial projects around the world. A variety of factors in the market place, including heightened requirements for non-combustible assemblies, environmental advantages, and design flexibility, promise to increase the specification and use of steel framing. This growth is destined to continue as other critical elements fall into place, including the establishment and proliferation of codes and standards, introduction of new tools and construction techniques, maturation of the truss and components industry, and an expanding ranks of knowledgeable and experienced framers and engineers.

As the use of steel framing has grown, so has the need to assess where that growth is taking place so that manufacturers, suppliers, and builders can better align themselves to meet current needs. The purpose of this study was to develop a statistical analysis of the nonresidential steel framing market and the industry's current participation in a broad spectrum of applications and categories of structures. Through this report, it is our intention that the user will gain a better, more precise understanding of where steel framing currently enjoys significant market share, and where there are opportunities for growth.



### Collection of Data

This report was developed by a team of individuals representing a broad range of disciplines within the steel framing industry, including builders, component and panel fabricators, steel producers, and stud manufacturers. Data was collected from a variety of sources, including F.W. Dodge, R.S. Means, the Steel Stud Manufacturers Association (SSMA), and FMI.

The data from F.W. Dodge provided the number of units and total square footage constructed for various nonresidential market segments, which included Stores and Food Service, Warehouses, Office and Bank Buildings, Hotels & Motels, Garages & Service Stations, Manufacturing Plants, Laboratories, Schools & Colleges, Libraries & Museums, Dormitories, Hospital & Health Treatment, Public Buildings, Religious, Amusement, Apartments/Assisted Living, and Miscellaneous. The data from R.S. Means provided typical building characteristics for each market segment, which included the number of stories, wall height and gross floor area. Additional characteristics for the representative buildings were derived, including the footprint area, length and width.

For each component (i.e., exterior walls, interior walls, floors and roofs) and for each representative building, typical framing designs were established and material intensities (lbs/sf) determined. These material intensities were multiplied by the square footage of construction from F.W. Dodge to compute the market opportunity (tons) for each market segment.

Overall market share was computed by dividing industry shipments (tons) by the market opportunity. Industry shipments were as reported by SSMA with an adjustment for estimated non-SSMA member shipments. Market share for interior walls was determined by considering only the industry shipments of 18, 27 and 30-mill thickness material. Market share for exterior walls was determined from an extensive survey that had been conducted in 1997 by FMI for the American Iron & Steel Institute (AISI). Market share for floor and roof framing represented the balance of industry shipments, excluding walls, divided by the market opportunity for these components.

## **Total Market Opportunity**

In defining the potential market demand for cold-formed steel framing, the entire area within a structure where framing members could be used was totaled and translated into tons using the method as described above. Not included in this calculation were areas within specific types of structures that typically would not be available to steel framing. For example, only elevated floor area was considered in determining the floor framing opportunity, as it is not envisioned that cold-formed steel would replace slab-on-grade construction.

If steel framing were used in all the available nonresidential applications, it would require shipments of 4,464,258 tons per year. By far, the largest segment would be Apartment/Assisted Living at 1,055,193 tons as these are typically multi-story structures with many interior walls, and large roof systems. Warehouses, Stores/Food Service, Office/Bank Buildings, and Schools/COLLEGES would also consume significant volumes of steel studs.

Roofs are the area within the structure where there is the greatest potential demand for steel studs at 1,432,569 tons per year. The Warehouses segment represents the largest possible demand at 317,635 tons per year, followed by Stores/Foodservice at 207,406 tons per year.

The second largest potential application for steel framing is Exterior Walls at 1,267,953 tons per year. Apartments/Assisted Living category represents the largest possible demand at 185,350 tons per year. Other Dodge categories with the largest potential demand include Stores/Food Service, Warehouses, and Garages/Service Stations that typically are designed as large perimeters with few interior partitions.

At 1,224,291 tons per year, the Interior Walls segment represents nearly as much potential as Exterior Walls. Again, the Apartments/Assisted Living category is the largest by far at 495,385 tons per year. Office/Bank Buildings, another category typified by many interior spaces, is second largest at 228,205 tons per year.

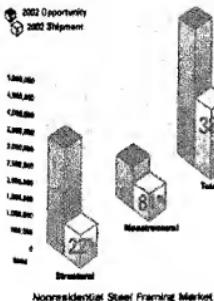
Not surprisingly, Floors is the nonresidential segment with the smallest potential demand for steel framing materials at 540,445 tons per year. This relatively small potential is due to the fact that nearly half of Dodge structural categories typically utilize slab-on-grade construction.

## Current Market Share

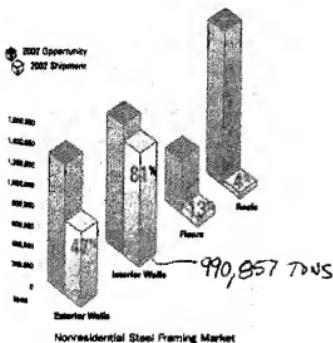
The estimated size of the current (2002) market for nonresidential steel framing is determined by applying a rationalized percentage (see section I.) to the total market opportunity described (Section II).

Using this method, the total amount of steel framing shipped to all nonresidential segments was 1,716,911 tons in 2002. Of the four main applications, it is not surprising that Interior Walls represents the largest single destination for steel studs at 990,857 tons in 2002. This is estimated to represent 81.4 percent share of the available market. Using the FMI study (Section I), Exterior Walls had obtained 47 percent share of the available market. Floors and Roofs are shown to have captured a very small portion of the available market at 13 percent and 4 percent, respectively.

Market Share by Product - 2002



Market Share by Application - 2002



### **Segments of Opportunity**

This study provides the reader with a starting point for developing a better understanding of "opportunity", which could be defined as the difference between actual and potential participation.

A partial analysis might show the following:

#### **Warehouses**

Total Opportunity	517,565 tons
Current Participation	97,933 tons
	<b>419,632 tons</b> Opportunity for Growth

#### **Schools / Colleges**

Total Opportunity	465,826 tons
Current Participation	120,383 tons
	<b>345,443 tons</b> Opportunity for Growth

#### **Dormitories**

Total Opportunity	61,786 tons
Current Participation	30,272 tons
	<b>31,514 tons</b> Opportunity for Growth

Other considerations could also include those factors that may weigh in favor of the use of steel framing, such as increasing requirements for non-combustible construction, and economic conditions that may stimulate or restrain types of structures within the nonresidential construction industry. Those considerations are beyond the scope of this document.

## Market Data and Building Characteristics

### FW Dodge Market Data

Dodge Segment	Mean Class	1,000 SF	No. of Units	Avg. SF	Stories	Wall Height	Gross SF	Footprint	Width	Length	LF/HW
1 Stores and Food Service	Restaurant, Fast Food				1	10	4000	4000	53	75	257
2 Warehouses	Average	252,865	20,449	12,366	1	12	4000	4000	53	76	257
3 Office and Bank Buildings	Warehouse	195,819	6,617	29,593	1	11	4000	4000	53	75	257
4 Hotels & Motels	Average	150,458	23,100	6,513	1	14	4100	4100	54	76	260
5 Garages & Service Stations	Model, 2-3 Story	39,396	1,121	35,144	3	9	49000	16333	107	152	1557
6 Manufacturing Plants	Garage, Service Station				1	14	10000	10000	84	119	406
7 Laboratories	Factory	196,915	4,887	32,109	1	12	1400	1400	31	45	152
8 Schools & Colleges	Medical Office, 1 Story	52,180	1,972	26,460	1	20	30000	30000	145	206	703
9 Libraries & Museums	School, Jr. High	227,850	11,767	19,380	2	12	110000	55000	197	279	1905
10 Dormitories	Library	12,881	1,182	10,998	2	14	22000	11000	86	125	852
11 Hospital & Health Treatment	Apartment 1-3 Story	23,071	721	31,999	3	10	22500	7500	73	103	1055
12 Public Buildings	Medical Office, 2 Story	96,558	7,480	12,909	2	10	7000	3500	50	70	490
13 Religious	Town Hall, 2-3 Story	36,361	2,627	13,917	3	12	18000	6000	65	92	944
14 Amusement	Church	51,146	4,543	11,258	1	24	17000	17000	110	155	529
15 Apartments/Assisted Living	Movie/Theatre	70,052	6,905	10,145	1	20	12000	12000	92	130	445
16 Misc.	Average	394,011	29,401	13,401	3	10	22500	7500	73	103	1055
Totals		1,800,451	125,360	14,362							

### Assumptions

- Means building models are similar to Dodge classifications.
- Widths and lengths are assumed values based on rectangular shaped buildings.
- LF or Web is building perimeter

## Exterior Walls

Cost of steel in each Dodge Classification based on 100% steel exterior walls.

Dodge Segment	Material Class	Stories	Wall Height	LF Wall	350S16243	600S16234	Steel In Wall
					Total (LBs)	Total (Tons)	
1 Stores and Food Service	Restaurant, Fast Food	1	10	257	5,153	0	0
	Store, Convenience	1	12	257	6,184	0	0
	Average	1	11	257	5,988	0	0
2 Warehouses	Warehouse	1	24	703	0	0	5,668 2.83
3 Office and Bank Buildings	Office, 2-4 Story	3	12	995	0	58,153	56,153 28.08
	Bank	1	14	260	0	0	12,109
	Average	2	13	627	0	15,967	6,055 22,021 11.01
4 Hotels & Motels	Hotel, 2-3 Story	3	9	1,557	0	37,487	0 37,487 18.74
5 Garages & Service Stations	Garage, Repair Garage, Service Station	1	14	406	0	0	18,912
	Average	1	12	152	0	4,878	0
6 Manufacturing Plants	Factory	1	20	703	0	2,439	9,456 11,895 5.95
7 Laboratories	Medical Office, 1 Story	1	10	340	6,817	0	46,794 23.40
8 Schools & Colleges	School, Jr. High	2	12	1,905	0	6,147	0 6,147 3.41
9 Libraries & Museums	Library	2	14	652	0	0	61,147 30.57
10 Dormitories	Apartment, 1-3 Story	3	10	1,095	21,169	0	39,670 36,670 19.83
11 Hospital & Health Treatment	Hospital, 2 Story	2	10	480	9,641	0	0 21,169 10.58
12 Public Buildings	Town Hall, 2-3 Story	3	12	944	0	30,294	0 30,294 15.15
13 Religious	Church	1	24	529	0	0	42,271 42,271 21.14
14 Amusement	Movie Theatre	1	20	445	0	0	29,595 29,595 14.80
15 Apartments/Accommodated Living	Apartment, 1-3 Story	3	10	1,095	21,169	0	0 21,169 10.58
16 Misc.	Average	2	14	949	0	0	44,623 44,623 22.31
Steel Properties	Weight LB/FT		Wall Properties		Weight of Wall Section (LBs)	Weight of Wall Section (Tons)	
350S16243	1.14		350S16243		100,32	100,32	
600S16243	1.52		600S16243		133,78	133,78	
600S16254	1.89		600S16254		166,32	166,32	

### Assumptions

• Metal commercial construction examples are typical of Dodge classifications

• All exterior walls are steel framed

• The sizes shown are approximate tons of steel.

• The sizes shown are used to determine amount of steel in example.

• Unit weight (1 ft high, 1' length) is based on calculations using a section 6' height, 10' long, 10° incl.

• 1.6 = the weight amplification factor to account for door/window openings, brickwork, waste, etc. included in the above calculation.

## Interior Walls

Tons of Item in each Dodge Classification based on 100% steel interior walls

Dodge Segment	Means Class	Shortest Wall Height	LF Wall	% Interior	LF Int. Wall	350S125-30	350S125-33	Steel in Wall
						Total (lbs)	Total (lbs)	Total (tons)
1 Stoves and Food Service	Restaurant, Fast Food	1	10	257	40	103	918	0.51
	Store, Convenience	1	12	257	40	103	1,102	0.51
	Average	1	11	257	40	103	1,010	0.51
2 Warehouses	Warehouse	1	24	703	25	176		5,107
3 Office and Bank Buildings	Office, 2-4 Story	3	12	955	600	5,968	70,904	0
	Bank	1	14	260	50	139	0	2,202
	Average	2	13	627	325	2,039	35,452	1,101
4 Hotels & Motels	Motel, 2-3 Story	3	9	1,557	600	9,342	83,237	38.58
5 Garages & Service Stations	Garage, Repair	1	14	406	25	102	0	83,237
	Average	1	12	152	25	38	0	1,720
6 Manufacturing Plants	Factory	1	13	219	25	70	451	0
7 Laboratories	Medical Office, 1 Story	1	10	340	500	1,699	15,183	4,255
8 Schools & Colleges	School, Jr. High	2	12	1,905	400	7,619	90,514	7,99
9 Libraries & Museums	Library	2	14	852	50	426	7,215	45.26
10 Dormitories	Apartment, 1-3 Story	3	10	1,055	600	6,330	56,578	3,61
11 Hospital & Health Treatment	Medical Office, 2 Story	2	10	480	500	2,402	21,472	2,29
12 Public Buildings	Town Hall, 2-3 Story	3	12	944	600	5,662	67,266	10.74
13 Religious	Church	1	24	529	50	265	7,688	3.84
14 Amusement	Movie Theatre	1	20	445	30	133	3,230	1.61
15 Apartments/Accommod. Living	Apartment, 1-3 Story	3	10	1,055	600	6,330	56,578	28.29
16 Misc.	Average	2	14	949	250	2,373	40,580	20.29

Steel properties	Weight LB/LF	Weight of Wall Section (LBS)	Weight Wt (LB/LF/FT HT)
350S125-30	0.65	57.20	0.89
350S125-33	0.72	63.36	0.99
350S162-33	0.88	77.44	1.21

### Assumptions

- Means commercial construction examples are typical of Dodge classifications
- All interior walls are steel framed
- Interior wall percentages vs exterior walls are assumed based on type of building.
- Three sizes studs are used to approximate tons of steel.
- LF of wall is used to determine amount of steel in example.
- 350S125-30 studs are used in walls mostly 12 feet high or less
- 350S125-33 studs are used for walls typically between 12 and 14 feet in height except for certain cases where thicker drywall studs are assumed.
- 350S162-33 studs are used for walls over 14 feet high

1.25 = the weight amplification factor to account for shear/window openings, bracing, waste etc. included in the above calculation.

**Floors**

Tons of steel in each Dodge Classification based on 100% steel floors

Dodge Segment	Means Class	Stories	Total SF	Footprint	Width	Length	800S200-43	1000S200-54	Total (LBS)	Total (tons)
1 Stores and Food Service Store, Convenience	Restaurant, Fast Food	1	4,000	4,000	53	75	0	0	0	0.00
	Average	1	4,000	4,000	53	75	0	0	0	0.00
2 Warehouses	Warehouse	1	30,000	30,000	145	206	0	0	0	0.00
3 Office and Bank Buildings Bank	Office, 2-4 Story	3	20,000	6,667	69	97	0	0	0	0.00
	Average	1	4,100	4,100	54	76	0	0	0	0.00
4 Hotels & Motels	Motel, 2-3 Story	3	49,000	16,333	107	152	72,425	72,425	72,425	36.21
5 Garages & Service Stations Garage, Repair	Garage, Service Station	1	10,000	10,000	84	119	0	0	0	0.00
	Average	1	1,400	1,400	31	45	0	0	0	0.00
6 Manufacturing Plants Factory	Factory	1	5,700	5,700	58	82	0	0	0	0.00
7 Laboratories	Medical Office, 1 Story	1	30,000	30,000	145	206	0	0	0	0.00
8 Schools & Colleges School, Jr. High	School, Jr. High	2	110,000	55,000	197	279	120,135	120,135	120,135	60.07
9 Libraries & Museums Library	Library	2	22,000	11,000	88	125	19,866	19,866	19,866	9.83
10 Dormitories	Apartment, 1-3 Story	3	22,500	7,500	73	103	27,040	27,040	27,040	13.52
11 Hospital & Health Treatment	Medical Office, 2 Story	2	7,000	7,000	70	70	5,575	5,575	5,575	2.79
12 Public Buildings Town Hall, 2-3 Story	Town Hall, 2-3 Story	3	18,000	6,000	65	92	21,753	21,753	21,753	10.88
13 Religious	Church	1	17,000	17,000	110	155	0	0	0	0.00
14 Amusement	Movie Theatre	1	12,000	12,000	92	130	0	0	0	0.00
15 Apartments/Assisted Living	Apartment, 1-3 Story	3	22,500	7,500	73	103	27,040	27,040	27,040	13.52
16 Misc.	Average	2	24,583	13,657	98	139	19,455	19,455	19,455	9.73

Joint properties	Weight LB/LF
800S200-43	1.98
1000S200-43	2.29
1000S200-54	2.86

## Assumptions

- Means commercial construction examples are typical of Dodge classifications
- All floor joists are steel flamed
- Three joist sizes are used to approximate tons of steel.
- Width and length of building are used to determine amount of steel in each example.
- 800S200-43 joists are assumed in buildings with 50-100 foot widths or less.
- 1000S200-54 joists are assumed for buildings wider than 100 feet.

**Roofs**

Tons of steel in each Dodge classification based on 100% steel framed roofs

Dodge Segment	Means Class	Stories	Total SF	Footprint	Width	Length	400S162-33	400S162-43	600S162-34	Total (US\$)	Total (Tons)
1 Stores and Food Service	Restaurant, Fast Food	1	4,000	4,000	53	75					
	Stone, Convenience	1	4,000	4,000	53	75					
	Average	1	4,000	4,000	53	75	6,562	6,562	3,28		
2 Warehouses	Warehouse	1	30,000	30,000	145	206					
3 Office and Bank Buildings	Office, 2-4 Story	3	20,000	6,687	69	97	13,995	97,325	97,325	48,66	
	Bank	1	4,100	4,100	54	76	6,724				
	Average	2	12,050	5,383	61	87	10,360	10,360	5,18		
4 Hotels & Motels	Motel, 2-3 Story	3	49,000	16,533	107	152					
5 Garages & Service Stations	Garage, Repair	1	10,000	10,000	84	119	20,916	53,169	53,169	26,98	
	Garage, Service Station	1	1,400	1,400	31	45	2,338				
	Average	1	5,700	5,700	58	82	11,627	11,627	5,81		
6 Manufacturing Plants	Factory	1	30,000	30,000	145	206					
7 Laboratories	Medical Office, 1 Story	1	7,000	7,000	70	100	14,868	97,325	97,325	48,66	
8 Schools & Colleges	School, Jr. High	2	110,000	55,000	197	279	177,981	177,981	177,981	7,34	
9 Libraries & Museums	Library	2	22,000	11,000	88	125	22,989	22,989	22,989	88,90	
10 Dormitories	Apartment, 1-3 Story	3	22,500	7,500	73	103	15,727	15,727	15,727	11,49	
11 Hospital & Health Treatment	Medical Office, 2 Story	2	7,000	3,500	50	70	5,752	5,752	5,752	7,86	
12 Public Buildings	Town Hall, 2-3 Story	3	18,000	6,000	65	92	12,610	12,610	12,610	2,88	
13 Religious	Church	1	17,000	17,000	110	155				6,30	
14 Amusement	Movie Theatre	1	12,000	12,000	92	130				55,325	
15 Apartments/Assisted Living	Apartment, 1-3 Story	3	22,500	7,500	73	103	25,063	25,063	25,063	12,53	
16 Misc.	Average	2	24,583	13,657	98	139	15,727	15,727	15,727	7,86	
							28,497	28,497	28,497	14,25	
Truss Cutoff properties		Weight LB/LF		Truss Profile		Weight/LF Truss					
400S162-33	0.94	400S162-33		400S162-43		400S162-43		600S162-34		600S162-34	
400S162-43	1.21					4,114					
600S162-34	1.89					6,426					

Assuming 20 foot truss, 4:12 pitch

Assumptions:

- Means common construction examples are typical of Dodge classifications
- All roofs are steel framed
- A standard 4:12 roof truss is assumed in all cases for simplicity
- Three axis studs are used to approximate tons of steel.
- Width and length of building is used to determine amount of steel in example.
- 400S162-33 studs are used in buildings up to 60 feet wide
- 400S162-43 studs are used for buildings between 60 and 100 feet wide
- 600S162-34 studs are used for buildings over 100 feet wide.

**Tons of Steel In One Building for Each Dodge Classification**

**Tons of Steel In Each Dodge Classification Using  
No. of Units From 2002 Data**

Dodge Segment	Exterior Walls	Interior Wells	Floors	Roofs	Dodge Segment	Exterior Walls	Interior Wells	Floors	Roofs	Total	
1 Stores and Food Service	2.83	0.51	0.00	3.28	1	Stores and Food Service	179,171	31,925	0	207,406	4,158,501
2 Warehouses	28.06	2.55	0.00	48.66	2	Warehouses	183,284	16,686	0	317,635	5,157,953
3 Office and Bank Buildings	11.01	18.28	4.82	5.18	3	Office and Bank Buildings	137,480	228,205	60,245	64,676	490,905
4 Hotels & Motels	18.74	41.62	38.21	26.58	4	Hotels & Motels	15,070	33,481	29,115	21,374	99,020
5 Garages & Service Stations	5.95	0.54	0.00	5.81	5	Garages & Service Stations	163,725	14,942	0	160,034	338,702
6 Manufacturing Plants	23.40	2.13	0.00	48.66	6	Manufacturing Plants	40,695	3,701	0	84,640	120,037
7 Laboratories	3.41	7.59	0.00	7.34	7	Laboratories	7,821	17,418	0	16,850	42,089
8 Schools & Colleges	30.57	45.26	60.07	88.99	8	Schools & Colleges	63,379	93,744	124,422	184,332	468,826
9 Libraries & Museums	19.83	3.61	9.83	11.49	9	Libraries & Museums	11,653	2,112	5,787	6,730	26,213
10 Dormitories	10.58	28.29	13.52	7.86	10	Dormitories	10,853	29,007	13,863	8,063	61,786
11 Hospital & Health Treatment	4.82	10.74	2.79	2.88	11	Hospital & Health Treatment	86,492	148,084	38,449	39,870	292,708
12 Public Buildings	15.15	33.63	10.88	6.30	12	Public Buildings	30,786	68,314	22,092	12,806	133,978
13 Religious	21.14	3.84	0.00	27.66	13	Religious	63,587	11,585	0	83,225	158,377
14 Amusement	14.80	1.61	0.00	12.53	14	Amusement	86,384	9,427	0	73,153	168,964
15 Apartments/Assisted Living	10.56	28.29	13.52	7.86	15	Apartments/Assisted Living	185,350	495,385	236,757	137,701	1,065,193
16 Misc.	22.31	20.29	9.73	14.25	16	Misc.	22,351	20,326	9,745	14,274	86,696
					Total		1,287,953	1,224,291	540,445	1,432,569	4,465,258

**Market Share Factors  
(Realistic Percentage of Buildings that used LGS In 2002)**

Dodge Segment	Exterior Walls	Interior Walls	Floors	Roofs	Total
1 Stores and Food Service	81%	0%	0%	29%	
2 Warehouses	46%	81%	0%	0%	19%
3 Office and Bank Buildings	47%	81%	10%	8%	5.3%
4 Hotels & Motels	39%	81%	10%	8%	38%
5 Garages & Service Stations	45%	81%	0%	10%	30%
6 Manufacturing Plants	62%	81%	0%	0%	22%
7 Laboratories	50%	81%	0%	0%	45%
8 Schools & Colleges	36%	81%	10%	4%	26%
9 Libraries & Museums	50%	81%	0%	2%	29%
10 Dormitories	30%	81%	15%	6%	49%
11 Hospital & Health Treatment	44%	81%	10%	4%	53%
12 Public Buildings	45%	81%	0%	0%	53%
13 Religious	43%	81%	0%	0%	23%
14 Amusement	49%	81%	10%	0%	30%
15 Apartments/Assisted Living	50%	81%	18%	10%	52%
16 Misc.	49%	81%	10%	4%	43%
<b>Totals</b>	<b>47%</b>	<b>81%</b>	<b>1.3%</b>	<b>4%</b>	<b>38%</b>

**Market (2002) In Tons After Applying Factors**

Dodge Segment	Exterior Walls	Interior Walls	Floors	Roofs	Totals
1 Stores and Food Service	80,627	25,838	0	16,592	123,057
2 Warehouses	84,445	13,488	0	0	97,933
3 Office and Bank Buildings	64,616	184,693	6,024	5,174	260,507
4 Hotels & Motels	5,877	27,081	2,911	1,710	37,580
5 Garages & Service Stations	73,676	12,063	0	16,003	101,773
6 Manufacturing Plants	25,231	28,985	0	0	58,216
7 Laboratories	3,910	14,097	0	1,011	19,019
8 Schools & Colleges	24,698	75,870	12,442	7,373	120,983
9 Libraries & Museums	5,807	1,709	0	136	7,651
10 Dormitories	4,233	23,476	2,079	484	30,272
11 Hospital & Health Treatment	29,256	115,857	3,845	1,587	154,546
12 Public Buildings	15,076	55,288	0	0	70,364
13 Religious	27,343	9,390	0	0	36,703
14 Amusement	42,238	7,829	0	0	49,867
15 Apartments/Assisted Living	92,675	400,930	42,616	13,770	549,992
16 Misc.	10,952	16,450	974	571	28,948
<b>Totals</b>	<b>590,750</b>	<b>690,857</b>	<b>70,893</b>	<b>64,410</b>	<b>1,716,911</b>

↑

**Value of Steel Sheet Using Factored Ton Numbers Immediately Above**

Dodge Segment	\$23.5/CWT (AMM December 2002)	Exterior Walls	Interior Walls	Floors	Roofs	Total
1 Stores and Food Service	\$ 37,894,589	\$ 12,143,653	\$ -	\$ 7,798,463	\$ 57,836,705	
2 Warehouses	\$ 39,869,295	\$ 6,239,467	\$ -	\$ -	\$ 46,028,732	
3 Office and Bank Buildings	\$ 30,369,371	\$ 86,269,714	\$ 2,831,504	\$ 2,431,806	\$ 122,438,366	
4 Hotels & Motels	\$ 2,762,319	\$ 12,729,158	\$ 1,988,390	\$ 803,658	\$ 17,662,526	
5 Garages & Service Stations	\$ 34,827,310	\$ 5,083,719	\$ -	\$ 7,521,608	\$ 47,833,237	
6 Manufacturing Plants	\$ 11,858,853	\$ 1,407,734	\$ -	\$ -	\$ 13,296,387	
7 Laboratories	\$ 1,833,7836	\$ 6,625,696	\$ -	\$ 475,182	\$ 8,938,715	
8 Schools & Colleges	\$ 11,608,218	\$ 35,658,742	\$ 5,847,836	\$ 3,405,434	\$ 56,580,229	
9 Libraries & Museums	\$ 2,729,113	\$ 803,449	\$ -	\$ 83,283	\$ 3,985,826	
10 Dormitories	\$ 1,989,361	\$ 11,033,797	\$ 977,354	\$ 227,375	\$ 14,227,864	
11 Hospital & Health Treatment	\$ 13,750,954	\$ 56,332,911	\$ 1,807,121	\$ 745,802	\$ 72,636,388	
12 Public Buildings	\$ 7,085,521	\$ 25,985,857	\$ -	\$ -	\$ 33,071,078	
13 Religious	\$ 12,851,006	\$ 4,399,220	\$ -	\$ -	\$ 17,250,227	
14 Amusement	\$ 19,884,186	\$ 3,985,820	\$ -	\$ -	\$ 23,460,008	
15 Apartments/Assisted Living	\$ 43,957,305	\$ 188,437,318	\$ 20,029,670	\$ 6,471,924	\$ 258,496,218	
16 Misc.	\$ 5,147,493	\$ 7,731,731	\$ 458,002	\$ 268,349	\$ 13,006,575	
<b>Totals</b>	<b>\$ 277,652,705</b>	<b>\$ 45,702,686</b>	<b>\$ 33,319,875</b>	<b>\$ 30,272,065</b>	<b>\$ 806,948,130</b>	

	Structural	Non-Structural	Total
Opportunity - 2002	3,240,967	1,224,291	4,465,258
SSMA Shipments - 2002	621,500	820,000	1,441,500
SSMA Estimated Share - 2002	75.0%	75.0%	75.0%
Industry Shipments - 2002	828,667	1,093,333	1,922,000
Residential Market - 2002	102,613	102,477	205,090
Nonresidential Market - 2002	726,053	990,857	1,716,910
Market - 2002 (from above)	726,054	990,857	1,716,911
Marketshare - 2002	22.40%	80.93%	88.45%

### Nonresidential Steel Framing Market



## **EXHIBIT B**

## Exhibit B

### Market (2002) in Tons After Applying Factors

Dodge Segment	Interior Walls (Tons)	Interior Walls (LBS)	LBS/Lin-Ft	Lin-Ft
1 Stores and Food Service	25,838	51,676,000	0.65	79,501,538
2 Warehouses	13,488	26,976,000	0.88	30,654,545
3 Office and Bank Buildings	184,693	369,386,000	0.88	419,756,818
4 Hotels & Motels	27,081	54,162,000	0.72	75,225,000
5 Garages & Service Stations	12,093	24,186,000	0.88	27,484,091
6 Manufacturing Plants	2,995	5,990,000	0.88	6,806,818
7 Laboratories	14,097	28,194,000	0.65	43,375,385
8 Schools & Colleges	75,870	151,740,000	0.72	210,750,000
9 Libraries & Museums	1,709	3,418,000	0.88	3,884,091
10 Dormitories	23,476	46,952,000	0.65	72,233,846
11 Hospital & Health Treatment	119,857	239,714,000	0.65	368,790,769
12 Public Buildings	55,288	110,576,000	0.72	153,577,778
13 Religious	9,360	18,720,000	0.88	21,272,727
14 Amusement	7,629	15,258,000	0.88	17,338,636
15 Apartments/Assisted Living	400,930	801,860,000	0.65	1,233,630,769
16 Misc.	16,450	32,900,000	0.88	37,386,364
Totals	990,854	1,981,708,000		2,801,669,176

- Weights (lbs/lineal Ft) are from Page 9 of Exhibit A
- Conversion of Tons to lbs is based on 2000 lbs per ton

# **EXHIBIT C**

## **Exhibit C**

### **Derivations of Weight per Foot (interior wall)**

These factors would be summarized in the following equation:

Width of Blank (inches) x Thickness of Blank (inches) x Length of Blank (inches) x  
Conversion Factor (lbs /Cubic inch) = lbs/lineal Ft

### **Existing Technology**

Width of Blank =	6.5in
Thickness of Blank =	.015 in
Length =	12 in
Conversion Factor =	<u>.283 lbs/cu in</u> .331 lbs/lineal Ft

### **Proposed Patent Technology**

Width of Blank =	4.1in
Thickness of Blank =	.015 in
Length =	12 in
Conversion Factor =	<u>.283 lbs/cu in</u> .209 lbs/lineal Ft

### **Material Savings – lbs/lineal Ft**

.331 lb/lineal Ft - .209 lbs/lineal Ft = .122 lb/lineal Ft

### **% Material Savings**

$((.331-.209)/.331) \times 100 = 37\%$

## **EXHIBIT D**

# AMM Steel Base Prices

25  
YEARS  
1982-2007

Market prices, f.o.b. mill, by grade, not including extra charges for size, finish, temper, packaging, shipping and other specifications.

## COILED PLATE

Plate produced on a continuous mill.

Grade Sheet

304 220.01

304L 223.01

316 338.20

316L 341.61

**UNCOILED PLATE**

Plate produced on a plate mill.

Grade Sheet

304 263.91

304L 267.01

309 NA

310 NA

316L 428.91

**BAR**

Smooth-turned round bar, 1" diameter, mostly in 10,000-lb quantities.

Grade Sheet

303 262.63

304 263.20

316 378.21

416 157.68

17Cr4Ni 264.00

**COLD-ROLLED SHEET**

Grade Sheet

301 118.00

302 128.00

304 228.01

304L 231.01

316L 352.81

**COLD-ROLLED STRIP**

Grade Sheet

304L 244.01

316L 363.01

NA—Not available

Estimated market prices per lb., f.o.b. mill or warehouse. Market prices were effective 06/24/07.

## COLD WORK DIE STEELS

(decarb free)

Grade A-2

Flat 1/2" x 1" \$3.80-\$4.00

A-2 Flat 3/4" \$3.25

D-2 Round 3/4" \$3.20

HOT WORK DIE STEELS

(decarb free)

Grade H-14 1/2" Round 1

H-14 2 1/4" round \$3.00

D-2 Flat bar \$3.75

H-14 round bar NA

H-14 1/2" Round 1

H-14 2 1/4" round \$3.00

D-2 Flat bar \$3.75

H-14 round bar NA

H-14 1/2" Round 1

H-14 2 1/4" round \$3.00

D-2 Flat bar \$3.75

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H-14 round bar NA

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H-14 2 1/4" round \$3.00

# **EXHIBIT E**

## **Exhibit E**

### **Derivation of Material Savings**

These factors would be summarized in the following equation:

Weight of material required to manufacture 1 foot-

Existing framing member	0.331 lb/lineal-foot
Proposed patent design	<u>0.209</u> lb/lineal-foot
Anticipated weight saving	0.122 lb/lineal-foot
Current price of Hot Dipped Galvanized Sheet	<u>\$0.39</u> per pound
Anticipated saving per lineal foot	.0475 per foot
Estimated market for this product	<u>2,800,000,000 feet/year</u>
Estimated market value	\$133,000,000 / year